United States

Department Of The Interior

Bureau Of Land Management

Missouri River Basin Investigations

LAND PLANNING AND CLASSIFICATION REPORT RELATIVE TO PUBLIC DOMAIN

(FOR ADMINISTRATIVE USE ONLY)

SOUTH PLATTE RIVER BASIN

(Colorado, Wyoming and Nebraska)

1953

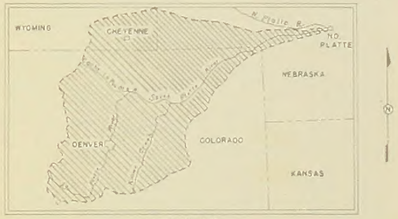
MISSOURI RIVER BASIN INVESTIGATIONS
BILLINGS, MONTANA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DIVISION OF PLANNING

SOUTH PLATTE RIVER AREA

PUBLIC DOMAIN MAP

COLO.–WYO.–NEB.



LOCATION MAP

LEGEND

POWER SITES	RECLAMATION WITHDRAWAL	STOCK DRIVEWAY
PUBLIC DOMAIN	EXPERIMENTAL PASTURE	PROPOSED RESERVOIR SITES
NATIONAL FORESTS	EXPERIMENTAL FOREST	EXISTING MAJOR RESERVOIRS
NATIONAL PARKS	MILITARY RESERVATION	HIGHWAYS (HARD SURFACE)
NE COLORADO TITLE III LAND	SOIL CONSERVATION DISTRICT	KNOWN AND UNDEFINED GEOLOGIC STRUCTURES
AREA MANAGED BY COLORADO FISH AND GAME COMMISSION	IRRIGATED LAND	RAILROADS
COLORADO GAME RESERVE	ARABLE LAND	NORTHERN COLORADO WATER CONSERVANCY DISTRICT

NORTHERN COLORADO WATER CONSERVANCY DISTRICT & SOIL CONSERVATION DISTRICT

12 6 0 6 12 18 24
SCALE IN MILES

BILLINGS DRAFTING OFFICE — MAY 1948

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

(MISSOURI RIVER BASIN INVESTIGATIONS)

LAND PLANNING

AND

CLASSIFICATION REPORT

RELATIVE TO

PUBLIC DOMAIN

South Platte River Basin

(Colorado, Wyoming and Nebraska)

Region IV
Salt Lake City, Utah
1953

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This report was compiled in connection with the program of the Department of the Interior for the development of the resources of the Missouri River Bason.

TABLE OF CONTENTS

ACKNOWLEDGMENTS

Information for this report was obtained from various sources including published and unpublished reports and documents of numerous Federal, State, and local agencies. Among these agencies are the Bureau of Reclamation, Geological Survey, Forest Service, Soil Conservation Service, Bureau of Census, Weather Bureau, and the State of Colorado.

A preliminary report of the South Platte River area was published in May 1949 under the general direction of R. D. Nielson, Regional Chief, Division of Lands, Region III, Bureau of Land Management at Billings, Montana. The preliminary report is a part of the land planning and classification study of the South Platte River Basin and should be read in conjunction with and as a part of this report, by parties interested in or concerned with land planning and classification, especially as it relates to the public domain of the report area.

This report was prepared under the supervision and direction of personnel of the Division of Lands, Region IV, Bureau of Land Management, Salt Lake City, Utah. Data relating to plant cover, grazing capacity, erosion, land use capability, and other factors pertaining to the physical aspects of South Park were obtained from a detailed study made by a field party under the supervision of Agricultural Economist Val B. Richman. The compilation of data was supervised and the report prepared by Forester Harold H. Price. This project in all its aspects, including the preparation of maps, was under the general direction of Wm. N. Andersen, Regional Chief, Division of Lands.

PURPOSE AND SCOPE

This report includes a general description of the South Platte River Basin. It shows the location, extent, and relationship of the public domain to the other lands of the basin. The report is intended to serve as a guide for the disposal of selected isolated tracts and to be an aid in the management of the land retained in public ownership by pointing out needed conservation measures and practices.

The report is concerned principally with the present condition of the resources and with the presentation of a program of conservation measures and management practices that will restore the watershed to an optimum condition and give stability after the restoration.

Although recommendations were made for all of the public domain in the report area, detailed program measures were planned largely for South Park in which most of the public domain is located and where the rehabilitation program has an excellent chance for success.

SUMMARY

The South Platte River drains approximately 24,000 square miles, 19,000 square miles in Colorado, 3,000 square miles in Nebraska, and 2,000 square miles in Wyoming. Topographically this drainage basin is divided into three major areas, the plains, the foothills, and the mountains which include the mountain valleys. In each of the three areas the geology, soils, climate, vegetation, land use, and economic pursuits are more or less distinct from either of the other areas.

The plains have abundant sunshine, low humidity, light rainfall, hot summers, cold winters, high winds, and great yearly fluctuations in precipitation and temperature. The elevation varies from 3500 feet to 5500 feet. The vegetation, which is predominately a short grass type, is used principally for cattle grazing. The area is sparsely settled and a few small towns are the main trade centers.

The foothill area has a less severe climate than does the plains. There is less fluctuation in daily temperatures and more moderate seasonal fluctuations. The vegetation is a transition between that of the plains and mountain area. The economic pursuits of the area include grazing, farming, processing of agricultural products, and mining. All of the large cities and most of the people are found in this area.

The mountain area has the most severe climate with greater extremes in temperature, a shorter growing season, and more precipitation than the other areas. The main industries are mining, livestock, and agriculture.

Within the mountain area is located South Park, a high mountain valley which embraces more than 50 percent of all of the public domain in the South Platte River Basin. In this valley the public domain is so located that it can, in all but a few cases, be effectively administered as a grazing district. The exceptions are a few small isolated tracts which would be of most value as a basis for exchange and consolidation.

The policy of the Bureau of Land Management will be to dispose of only those tracts which do not lend themselves to economical supervision, or those which will serve no public purpose by retention. Prior to disposal, public agencies will be appraised of the intention to dispose of the land so as to give them an opportunity to secure the land if they have an interest in its acquisition.

The Bureau's program for the management of the grazing land of the area includes extension of the boundaries of Colorado Grazing District No. 5 to embrace all the public domain within South Park and to consolidate, where possible, the public domain by exchanges

with State and private interests. In addition, it is planned to establish, through cooperation, such measures and practices that will improve and preserve the land and other resources of the public domain and adjoining ranges so that the watershed will yield an optimum of forage, timber, water, and serve to its maximum human needs.

SOUTH PLATTE RIVER BASIN

General

Within the South Platte Drainage Basin are found great extremes in elevation, topography, and population. The elevations range from 3500 feet on the gently rolling plains to over 14,000 feet on the rugged mountain peaks. Precipitation varies from an average annual of less than 12 inches at Byers on the plains to over 33 inches at Silver Lake in the higher mountains. The population of the plains and mountains averages less than two people per square mile, while Denver County averages over 6,000.

Location and Size

The South Platte River has its source in South Park of Park County, Colorado. After leaving the Park the river flows generally northward to near Greeley, Colorado where it changes direction to follow an irregular east-northeast course to its junction with the North Platte River at North Platte, Nebraska.

The basin has a gross area of about 24,000 square miles, 19,000 square miles of which are in Colorado, 2,000 square miles in Wyoming, and 3,000 square miles in Nebraska (see front map No. 1).

Physiography

The South Platte Drainage Basin is divided physiographically into three general areas, the mountains, the foothills, and the plains. The mountains, which form the western boundary of the basin, include the Rampant range and the Colorado Front range. The peaks of these ranges, which include Mount Evans, Longs Peak, Arapaho Peak, and Pikes Peak, are all in excess of 13,500 feet in elevation and are among the highest in the continental United States. Within this mountain area are a number of high intermountain valleys, the most prominent of which is South Park.

Between the mountains and the plains is a series of long narrow hogbacks or foothills, 5500 to 6000 feet in elevation, with shallow valleys, the floors of which are from 300 to 500 feet below the crest of the ridges. Within these valleys are located the principal centers of population.

The plains, which slope eastward from an altitude of about 5500 feet, include part of the Colorado Piedmont as well as the high plains of Colorado. The western part of the Colorado Piedmont is occupied by low rounded hills and irregular basins.

Climate

Because of the diversified topography there is a wide range of climatic factors in this basin (Table 1).

The climate of the plains is distinctly continental, and is characterized by low relative humidity, abundant sunshine, light rainfall, hot summers, cold winters, high winds, and extreme fluctuations in temperature and precipitation from year-to-year. Most of the precipitation falls from April through September. The winds, which often reach high velocities, come from the north of northeast in winter and from the south or southeast in summer.

The climate of the foothills differs from that of the plains in that the foothills have less wind and a more temperate winter climate with more moderate temperature fluctuations. The snowfall of the area is less than in the mountains and the day-to-day weather is more uniform than in either the mountains or the plains.

In the mountains the extreme maximum temperatures are closely related to elevations. The summer temperatures seldom reach 100 degrees and frosts may occur any month of the year. The precipitation is higher than that of either the foothills or plains and occurs mostly in the summer.

The frost free period in the foothills and plains is usually adequate for the production of small grains and forage crops as well as such crops as potatoes, beans, cabbage, and sugar beets. The mountain valleys have a short variable growing season and are only suited to the production of hay or other hardy short season crops.

Vegetation

The vegetation of the plains is dominantly a short grass association composed largely of buffalo grass, bluestem, sideoats grama, blue grama, and ring muhly grasses. The shrubs in the association are mainly sagebrush, rabbitbrush, and saltbrush.

The vegetation of the foothill valleys is similar to that of the plains, but in the foothill area, exclusive of the valleys, the vegetation is more varied than that of the plains. Pinon-juniper woodland and its associated species dominate the shallow soiled ridges while sagebrush, serviceberry, bitterbrush, birchleaf mahogany, and other mountain brush occupy the higher slopes and the ridges where the soils are deeper and more fertile.

In the mountain area the vegetation is predominantly forest and mountain browse with yellow pine, spruce, douglas fir, and lodgepole pine, the most prevalent coniferous trees, and aspen, the most common deciduous

TABLE I

CLIMATOLOGICAL DATA OF SOUTH PLATTE RIVER DRAINAGE

Station	Elev. Feet	Temp. Max.	Temp. Min.	Frost Free Period Days	Average Annual Precip. Inches	Average Annual Precip. May-Sept. Inches
Mountain Area						
Francis	9300	86	-25	108	25.02	8.68
Frys Ranch	7500	94	-36	98	16.93	12.77
Idaho Springs	7543	90	-29	121	15.97	9.60
Longs Peak	8956	94	-33	58	21.64	11.55
Moraine	7775	96	-42	88	16.59	8.67
Estes Park	8000	98	-35	93	18.77	10.16
Foothill Area						
Boulder	5347	100	-33	163	18.12	9.55
Castle Rock	6201	99	-37	132	17.39	10.26
Denver	5283	105	-29	160	14.21	7.88
Edgewater	5450	101	-30	139	16.40	9.11
Fort Collins	4985	102	-38	142	14.95	8.75
Longmont	4950	103	-38	146	14.64	8.55
Plains Area						
Fort Morgan	4319	103	-36	143	13.83	9.22
Greeley	4649	106	-45	147	12.86	7.93
Grover	5076	101	-37	119	13.84	9.00
Julesburg	3415	105	-38	140	17.40	11.70
Sterling	3934	103	-33	143	15.84	10.23

species. At extreme elevations there are minor areas of alpine and subalpine vegetation. There are also a number of mountain parks, some of them quite extensive where grass and sedges are the main vegetation.

Soils

Most of the soils of the South Platte Basin have been developed in place, primarily from the igneous, metamorphic, and sedimentary rocks of the area and from alluvial material carried down from the mountains. The alluvial soils are confined largely to the valley of the South Platte River.

The soils of the foothills and plains are primarily loam, fine sandy loam, silt loam, silty clay loam, and heavy clay loam. The mountain soils are not uniform and vary greatly in color, texture, and depth within short distances.

PROGRAM OF THE BUREAU OF LAND MANAGEMENT

General

The foremost problem confronting the Bureau in the administration of the public domain in the South Platte watershed is to have the lands under its jurisdiction serve their highest use. In some cases this will involve the transfer of the land to other ownership. In other cases the land will be retained under the supervision of the Bureau of Land Management.

Policy

The basic policy will be to retain all lands where the public interest justifies the Bureau of Land Management's continued supervision. This will include some small isolated tracts that lie within the mountain, foothill, and plains areas which are valuable for homesites, recreation, watershed protection, or potential timber production. In the main, the lands to be retained will be the parcels which are of considerable size and concentration, and which lend themselves to economical and effective supervision by the Bureau of Land Management.

The main effort will be directed toward instituting needed management and improvement measures to reach the long-time conservation objectives of adequate watershed protection through proper protection and development of the resources, along with the use of the resources consistent with the well being of the public interest.

Where the tracts are small, scattered, and isolated so that they do not lend themselves to effective supervision by the Bureau of Land Management, and if disposal will not be adverse to the public interest, emphasis will be placed upon transferring the tracts to other

ownership where they can be more effectively and efficiently administered in line with their highest use. The transfer may be to some other Federal agency, the State, the County, or to an individual.

LAND DIVISIONS

The lands under the jurisdiction of the Bureau of Land Management within the South Platte Drainage fall into three groups, each group somewhat separate and distinct from the other and each occupying distinct geographic locations (Fig. 1). Since the management of the lands in each location presents a different problem and will require a different solution, each group will be discussed separately under the headings of "Lands of the Foothills and Plains", "Public Lands Within Areas Covered by Mining Claims", and "Lands of South Park".

Lands of the Foothills and Plains

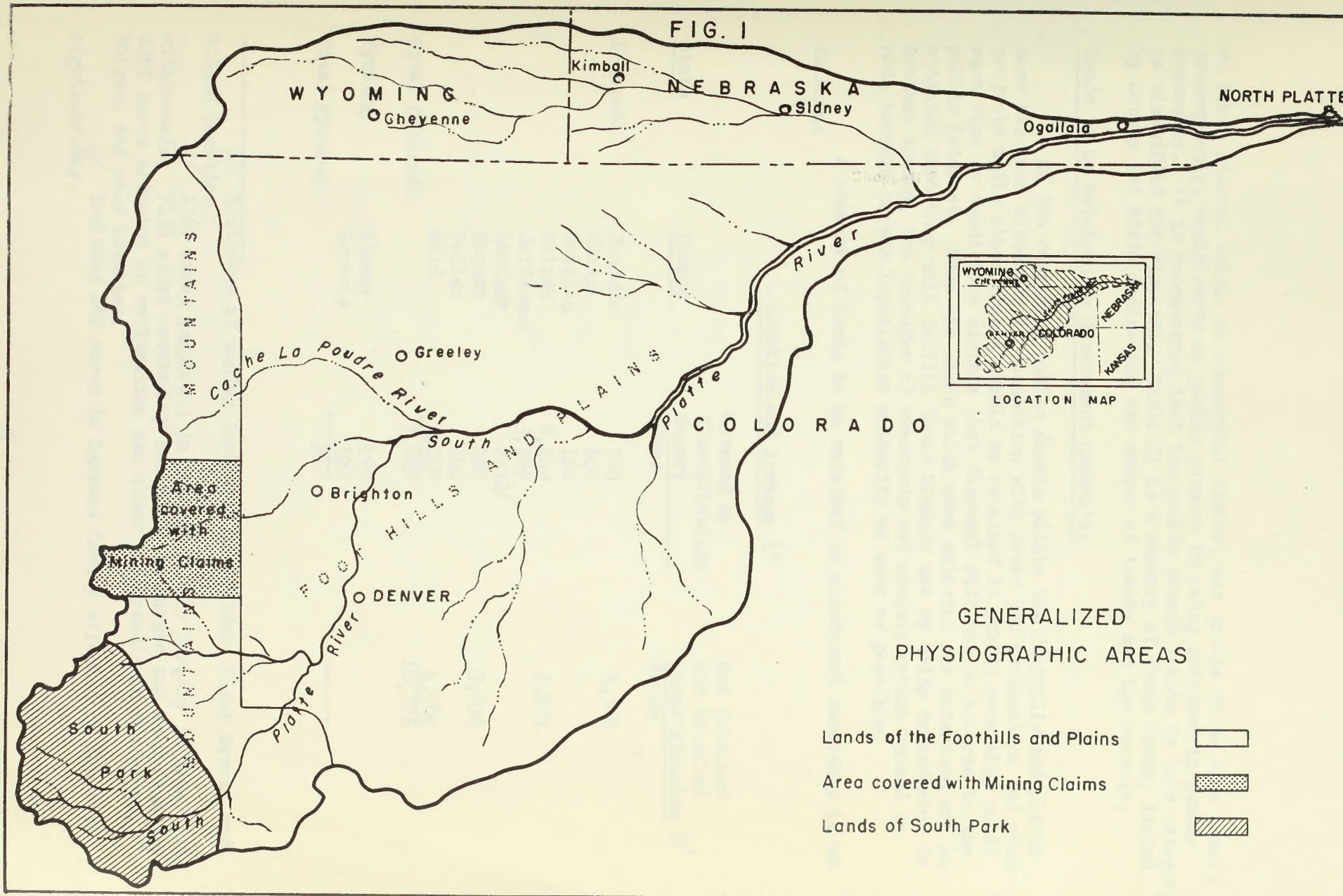
There are some 25,000 odd acres of public domain in the foothills and plains of the South Platte River watershed. For the most part, these lands are in small isolated tracts, seldom containing more than 160 acres. The tracts are scattered in nearly all counties in this part of the watershed. As has been stated, the policy pertaining to these scattered tracts will be to dispose of the bulk of these lands to some public agency or to individuals so that the lands may attain their most useful purpose. Most of the lands have been examined and from this it was determined that of the 25,000 acres of public domain, approximately 12,600 acres have been withdrawn for specific purposes and are not subject to any sort of entry. Some 6500 acres of the withdrawn lands are located in Weld County, Colorado and have been withdrawn by Executive Order No. 10046 dated March 25, 1949, and made part of the 750,000 acre North Colorado Utilization Project which is administered by the United States Department of Agriculture through the Soil Conservation Service. Other withdrawals have been made for reservoirs, powersites, rights-of-way, etc. With the exception of this 6500 acre withdrawal, the grazing on the public domain in this area is administered by the Bureau of Land Management.

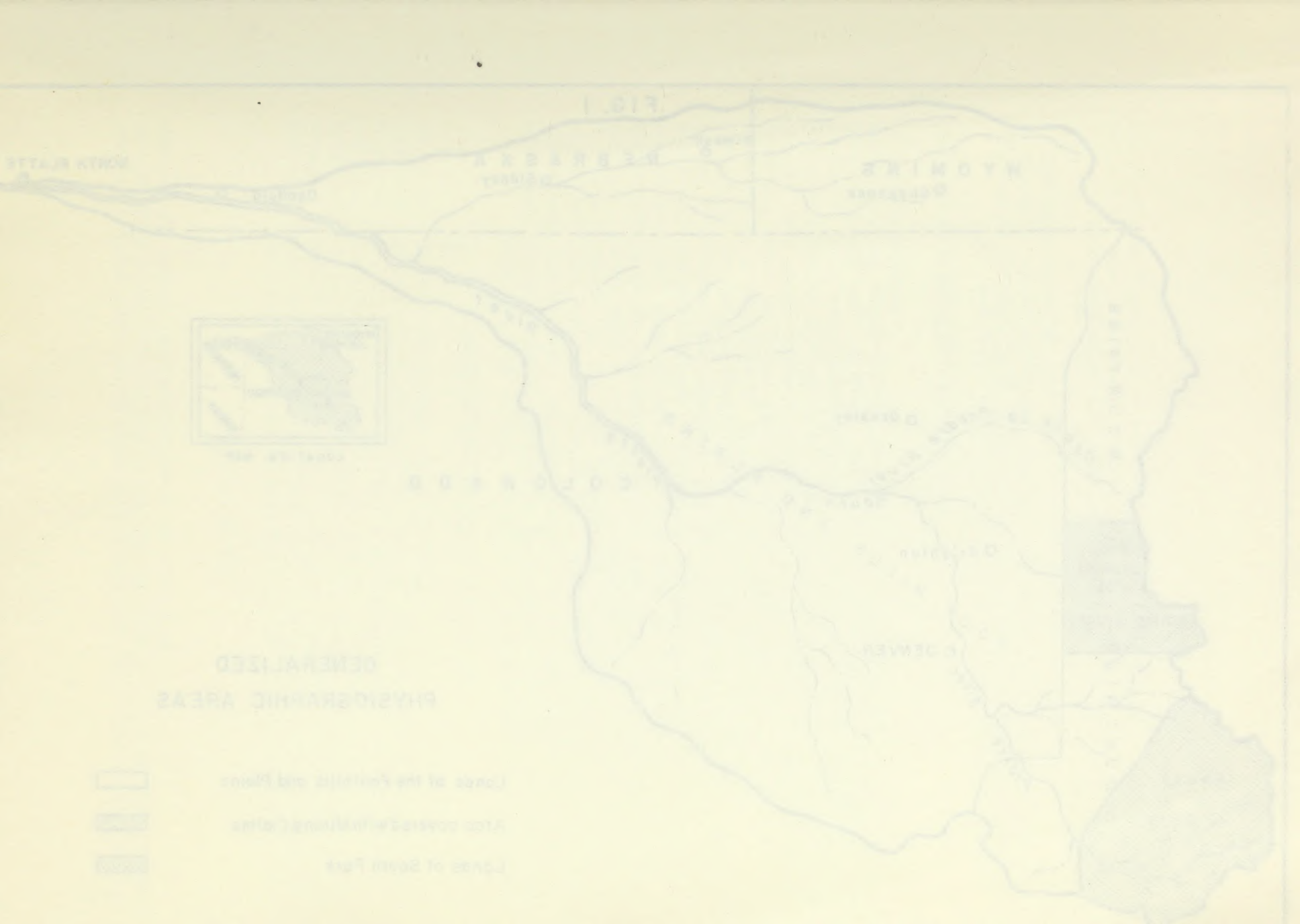
Lands to be Classified for Disposal

The examination disclosed that there are 122 isolated tracts, aggregating approximately 10,700 acres, which are suitable for disposal by exchange, sale, or public auction under the provisions of Section 14 of the Taylor Grazing Act.

The unreserved and unappropriated public lands in the foothill and plains sub-area are not adapted for farming but are suited primarily for livestock grazing in connection with adjacent private lands. They have

FIG. 1


Kimball
WYOMING
NEBRASKA
Cheyenne
Sidney
NORTH PLATTE
Ogallala
MOUNTAINS
Cache La Poudre River
Greeley
South Platte River
COLORADO
Area covered with Mining Claims
Brighton
FOOTHILLS AND PLAINS
DENVER
South Platte River
FRONT RANGE
South Park
South
WYOMING
NEBRASKA
COLORADO
KANSAS
LOCATION MAP
GENERALIZED
PHYSIOGRAPHIC AREAS
Lands of the Foothills and Plains
Area covered with Mining Claims
Lands of South Park



no known mineral value, no commercial timber, and little or no live water; consequently, would serve no public purpose by being retained in public ownership. It is recommended that the public domain tracts in this category be classified for disposal. Table II is a summary of these lands, listed by County and State indicating the number of tracts and the acreage.

Lands to be Retained in Government Ownership

Of the remaining public domain within the foothills and plains some has been withdrawn in connection with power and reclamation and other projects while other tracts should be retained in public ownership until such time as conditions dictate that disposal will not be adverse to the public interest. When the lands which were selected for retention are so situated that they will fulfill their highest use by being transferred to another agency, the transfer of ownership and administration should be made through proper legislative authority as soon as possible.

A summary of lands to be retained in government ownership is as follows:

Location and Acreage 1/

State	County	Covered by Classification Report Acres	Not Examined for Detailed Classification 2/ Acres
Colorado	Boulder	760	1,360
	Clear	800	
	Douglas	160	
	Gilpin	2,240	1,874
	Jefferson	3,369	
	Larimer	717 3/	
	Morgan	200	3,036
	Teller	240	
	Weld	1,059	4,506
Total Colorado		7,545	10,776
Wyoming	Albany	195	
	Laramie	320	
Total Wyoming		515	

1/ Exclusive of mining districts in Boulder, Clear Creek, and Gilpin Counties.

2/ 1360 acres (approx.) in Boulder County largely in power site withdrawals. 7134 acres covered by dam sites in Morgan and Weld Counties. 2282 acres affected by reclamation and other withdrawals in Jefferson, Morgan, and Weld Counties.

3/ Includes 662 acres in Laramie County affected by dam site rights-of-way.

TABLE II

LANDS TO BE CLASSIFIED FOR DISPOSAL. SUMMATIONS BY COUNTIES AND STATES
LOCATION, NUMBER, AND ACREAGE OF TRACTS

State	County	No. of Tracts	Nearest Combined Acreage
Colorado	Boulder	4	190
	Douglas	5	239
	Elbert	4	168
	El Paso	1	40
	Gilpin	1	37
	Larimer	39	3,799
	Logan	3	320
	Morgan	11	519
	Park	3	120
	Sedwick	2	71
	Teller	2	80
	Washington	5	240
	Weld	15	1,585
Total Colorado		95	7,408
Wyoming	Albany	10	1,328
	Laramie	16	1,755
Total Wyoming		26	3,340
Nebraska	Lincoln	1	0.03
Grand Total		122	10,748

A detailed legal description of these tracts is included in the appendix of this report and the approximate location of the tracts is shown on the map in the front of this report.

Public Lands Within Areas Covered by Mining Claims

In the mountain area, principally in Clear Creek, Gilpin, and Boulder Counties, there are a number of old mining camps, at present in various stages of activity or abandonment. Most of the land in and adjacent to these camps has been patented under the mining laws. However, there remains scattered among these patented claims numerous irregularly shaped pieces of public domain, some as small as one-hundredth of an acre. In places there are more than 150 such tracts, aggregating less than 100 acres, located in a single section. As a rule this land has not been adequately surveyed and it is impossible to accurately determine the extent or location of the public domain without making additional cadastral surveys. Some of these tracts have had no claims filed on them but the majority of the tracts of public domain are covered by mining locations, some of which have been abandoned or are invalid because of the lack of a valid mineral discovery. Before it can be determined if the public domain is open to entry, each tract must be examined for minerals and a costly and time-consuming search of the county records must be made by a competent mineral examiner to determine if the locations are valid. When this has been accomplished, adverse proceedings must be instituted by the department to cancel the invalid mining claim before the land can be opened for other types of entry.

Because of the mountainous topography, shallow soil, small size, and irregular shape of these tracts of public land, the only practical use to which they can be put, aside from possible mineral locations, are some of the uses provided for in the Small Tract Act such as building sites, recreation areas, etc.

Although the demand for use on most of the public land in the old mining areas is not great at the present time, the land should be surveyed and classified in the near future since all of these tracts are located relatively close to large centers of population where there will be an ever increasing demand for suitable sites of this type. These lands are located largely in the following townships:

Boulder County	T. 1 N., R. 71 W.
	T. 1 N., R. 72 W.
	T. 1 N., R. 73 W.
	T. 1 S., R. 71 W.
Gilpin County	T. 3 S., R. 72 W.
	T. 3 S., R. 73 W.
Clear Creek County	T. 4 S., R. 73 W.
	T. 4 S., R. 74 W.
	T. 4 S., R. 75 W.

A reconnaissance examination was conducted of the above area for the purpose of locating tracts of public land suitable for classification under the Five Acre Tract Act of 1938. One tract located in sections 15 and 21, T. 4 S., R. 75 W., was considered suitable for such classification and was written up in "SL 18964, Proposed Five Acre Tract Area Report". It is proposed that classification be completed and steps taken toward disposal of the lands in this tract.

Lands of South Park

General

South Park, with the surrounding national forest land, is one of the most important watershed areas of the South Platte River Basin. It lies in Park County and embraces all of the upper South Platte River Basin above the Eleven Mile Canyon Reservoir and the Tarryall Reservoir, exclusive of the land within the national forest boundary. The location, extent, and relationship to the rest of the South Platte Watershed can be seen by referring to the South Platte map in the front of the report. South Park is located in the extreme southwestern part of the river basin. It is the source of water for irrigating the hay lands of the Park and other lands of the river basin, but perhaps its greatest value is as a collection basin for water to be used in the City of Denver. The Antero and Eleven Mile Canyon Reservoirs, which have a combined storage of 115,000 acre feet, impound runoff from this watershed to be released later for municipal use in Denver. It is important that the lands of the watershed be managed in a manner that will contribute a minimum of sediment and a maximum of good quality water to the reservoirs.

The resource and management study of the public domain within the South Park indicates that with minor exceptions, the public domain within the Park should be retained under the Bureau of Land Management administration. At present, the public land is being administered in two ways, by grazing lease and through grazing district administration. All of the land in South Park lying south of the north line of township 12 south is within Colorado Grazing District No. 5. The status map in the appendix shows the north boundary of the district and the location and distribution of the public domain of South Park, both within and without the district. Although the Bureau has jurisdiction over only a small percentage of the land in the district, is has, through supervision and cooperation with other land holders, been instrumental in getting better land management in the area.

The public domain lying north of the grazing district is as favorably located from the management standpoint as are the public lands within the grazing district and should be incorporated with the established grazing district. It cannot be logically separated from similar lands lying south of the district boundary since this boundary follows no natural barrier or division line at which grazing conditions differ or on which the

administrative policy should be changed. It would simplify the supervision and improve the efficiency of the management of the public domain if all such lands were incorporated in the district and could be uniformly administered under a long range conservation plan.

It may be that some of the public domain tracts are so located that they will not lend themselves effectively to grazing district management due to isolation or some other factor. Such lands, when suitable, should be classified for sale. A detailed forage study indicated that the average carrying capacity of the State and Federal lands is approximately equal, and that much of the private land in the vicinity of the public domain is similar in nature and carrying capacity. Thus, an exchange on an equal value basis would be a fairly simple undertaking. The vegetation map in the appendix shows the vegetal types and the grazing capacity of each type. The first red numeral in the type designation indicates the type. The abbreviations indicate the dominant plant species. The numerals below the type description give the carrying capacity or the number of acres required to provide feed for one cow for a month.

A comparison of the grazing capacity of the public domain and other lands will show that in most cases there is no appreciable difference in the value for grazing as compared with other lands in the Park.

Character and Size

South Park is a prominent mountain valley which varies in elevation from 8600 feet at the Eleven Mile Reservoir to more than 10,000 feet in the north end of the Park. It is entirely surrounded by wooded mountain ranges which form a sharp contrast to the grassy plains which they enclose.

The Park has an area of approximately 489,000 acres, which consists of 361,700 acres of private land, 64,300 acres of public domain, and 63,000 acres of State land. On a percentage basis there is 74 percent private land and 13 percent each of public domain and State land. The public land, in various sized and shaped tracts, is intermingled with the State and private land in a haphazard pattern in all parts of the area. (Refer to status map appendix for the distribution pattern of public domain, and its relationship to the State and private land.)

Climate

Because of the elevation and other factors, the climate is characterized by long, cold winters and short, mild summers. The winter temperatures often reach -30° while the summer temperatures seldom reach 100°, and frost may occur during any month of the year. The growing season is usually less than 100 days. The average annual precipitation in the valley is about 12 inches, two-thirds of which falls in the five summer months, May through September. Winter precipitation is usually in the form of snow.

Soils Capability and Erosion

The soils of the hill areas are residual in origin while those of the valleys are derived from the alluvium accumulated from the adjacent hills. They are, on the whole, deep and fertile, but tend to erode when excessively used. Most of the terrain is gently sloping and otherwise favorable to reseeding or to the installation of other measures which will be needed to rehabilitate the watershed. A detailed field classification of the land use capabilities of this area was made in accordance with the standards which have been devised by the Soil Conservation Service. The results of this survey are indicated graphically on the capability map in the appendix. Here is shown the relative size and location of the land area in the different capability classes. As will be seen on the map, only Classes IV through VIII were found. Following is given a brief description of each class and the extent to which it occurs in the Park. (See the appendix for details of the standards used in the capability classification.)

From the survey it was determined that 12 percent of the land is Class IV. This class is best suited for permanent vegetation but is also suitable for limited cultivation under intensive conservation practices. Sixty-six percent of the Park is in Class V. This land is not suitable for cultivation because of poor drainage, obstacles, or a lack of sufficient water for cultivated crops. The land in this class is suitable for grazing or woodland with no special restrictions. Fifteen percent of the land is in Class VI which is suitable for permanent vegetation for grazing and woodland, but requires moderate restricted use because of vulnerability to erosion. Six percent of the land is in Class VII and is too steep and rough for grazing except with severe restrictions. One percent of the area is in Class VIII. In this class are the water surfaces and the lands which are too rough and steep for grazing. In Table 3 is given a breakdown of capability classes by ownership.

Erosion is closely associated with the capability classes. Severe erosion is confined largely to the steeper, easily disturbed soils of Class VI and VII, while the slight and moderate erosion is found predominantly on areas designated as capability Class IV and V. There are, on the land under discussion, about 75,000 acres of severe erosion, about 304,000 acres of moderate erosion, and 110,000 acres of slight erosion. These figures include both sheet and gully erosion.

Vegetation

The vegetation of South Park is composed predominantly of grass and grasslike plants (see vegetation map appendix). Even within the vegetal types that have been classified as browse, conifer or aspen, grass is prominent in the plant association. From the plant cover inventory made of South Park, it was determined that 72 percent of the Park was covered by grass types. By far the largest part of the grass

TABLE III
LAND USE CAPABILITY CLASSES
SOUTH PARK, SOUTH PLATTE DRAINAGE BASIN
PARK COUNTY, COLORADO

Class	Ownership in Acres BLM	State	Private	Total
IV Poor Tillable	2,856	4,562	49,379	56,797
V Good Grazing	45,156	45,727	229,918	320,801
VI Fair Grazing	12,690	8,188	51,140	72,018
VII Steep Grazing	3,413	4,204	24,226	31,843
VIII Waste	237	310	7,020	7,567
Totals	64,352	62,991	361,683	489,026

type, some 68 percent of the Park, is of the open grassland type in which the dominant forage species are blue grama, muhly grass, June grass, three awn grass, and western wheatgrass. Associated with the grasses are such plants as snakeweed, loco weed, carex, and others. An additional 14 percent of the Park, mostly the valley bottoms adjacent to the streams, is occupied by meadows which might be designated as wet and dry. The wet meadows are those which have sufficient moisture during the season to produce vegetation in volume enough to be cut for hay. The dry meadows are so designated because the water which supplies them in the early season dries up before the vegetation can attain sufficient growth to be harvested for hay and must be used as pasture. The vegetation is composed almost entirely of various species of carex and juncus.

Aspen and its associated plants occupy eight percent of the basin. This cover type consists mainly of mountain fescue, carex, poa, mountain muhly, mountain oats, June grass, and such forbs as peavine, yarrow, and strawberry. Aspen usually occupies favorable sites at higher elevations.

Dwarfed ponderosa pine occupies about nine percent of the area, mostly the shallow soiled low ridges where, because of unfavorable soil and moisture conditions, the vegetation is comparatively sparse. Barren areas and water surfaces account for approximately one percent of the area.

The vegetative type map of the appendix shows the distribution, extent, and location of the various cover types. In Table IV is a summary of the vegetal types by ownership.

In all of the above vegetative types there is considerable room for improving the quality and/or quantity of the vegetation. Heavy past use has diminished the number and vigor of the more desirable forage plants and indiscriminate cutting has almost depleted the area of merchantable timber. Over large areas the abuse has been of sufficient magnitude to lower the infiltration capacity and increase surface runoff to the extent that severe sheet erosion is prevelant over large areas and gullies have been formed in many of the steeper slopes. The movement of this soil material is a threat to the life of the reservoirs which impound water from the watershed.

Economy and Land Use

Around the turn of the century gold mining was an important industry in South Park, and again between 1932 and 1941 there was a revival of both lode and placer mining. At present, however, no gold mines are operating. A number of small mines in the Alma District are producing base metals. Deposits of non-metallics such as feldspar, beryl, and mica occur along the southern fringe of the Park.

At present the land in South Park is used mostly for livestock agriculture. Because of the high elevation, short growing season, and other factors which are unfavorable to the production of all but the most hardy of cultivated crops, there is very little farming except the harvesting of native hay. The meadows are quite extensive and produce much more hay than can be consumed by the stock which use the grazing land of the Park. Thus, an outside market must be found in which to dispose of many tons of surplus hay.

The rehabilitation measures which are proposed for the area will increase the range vegetation to the extent that many additional head of livestock can be grazed on the summer range and in turn, more hay will be required to carry these stock through the winter. This will bring about a better balance between range forage and winter feed and will result in a more profitable use of the hay crops.

RECOMMENDED REMEDIAL PROGRAM

The public domain tracts within the Park are inseparably connected with the economy of the area and must be managed in conjunction with the State and private land, among which they are scattered. The land tracts in different ownerships are so co-mingled and their use so interdependent that any program to be fully effective must be basin-wide in extent. When treatment is applied, it should be installed as a unit on the affected area regardless of land ownership. This will require a coordinated program to be participated in by all land holders.

Since it is not feasible to install the program on the entire area at one time, smaller units, preferably sub-basins or drainages which are of sufficient size to be economically and efficiently rehabilitated and managed, should be selected. Treatment should proceed progressively unit-by-unit and care should be taken in selecting the areas to be treated so that the grazing will receive a minimum of disturbance.

Although the program for the public domain in South Park would be most effective if initiated in conjunction with the overall treatment for the Park, should circumstances prevent this cooperation, a program adapted to the conservation and rehabilitation of the watershed can be instituted on the public domain, separate from programs which are planned for other lands of the unit. The program for the public domain consists of a series of integrated and independent measures such, that if the desired improvement can be obtained by administration and protection alone, no special physical treatment will be applied. But where soil and cover conditions are such that management, of itself, will not bring about the required improvement in a reasonable length of time, facilitating measures will be installed. In developing the program, different intensities of treatment were considered and it was concluded

TABLE IV
ACRES OF VEGETATIVE TYPES
SOUTH PARK OF SOUTH PLATTE BASIN

Vegetative Type	Public Domain Acres	%	State Land Acres	%	Private Land Acres	%	Total Acres	%
Grassland	48,882	76	48,012	75	235,347	65	332,241	68
Meadow	3,202	05	5,552	09	57,607	15	66,361	14
Mountain Browse	70	-	40	-	2,926	01	3,036	-
Coniferous Timber	5,711	09	5,908	09	30,885	09	42,504	09
Waste & Barren[1/]	237	-	310	-	7,020	02	7,567	01
Aspen	6,250	10	3,809	07	27,108	08	37,167	08
Cultivated	-	-	-	-	150	-	150	-
Totals	64,352	100	63,631	100	351,043	100	489,026	100

1/ Includes water surface.

that the most effective and economically feasible program for the land involved is one of vegetative restoration and land treatment supplemented, in aggravated cases, with structural works.

Restoration of plant cover will stabilize the soil and increase its absorptive ability, both in rate and capacity. Thus, surface runoff will be reduced and soil erosion checked. In order to secure the desired improvement in vegetal cover, range use should be adjusted and administered so that desirable vegetation will have a chance for optimum recovery. It will require continued vigilance and concentrated effort on the part of both administrators and users to increase forage, stabilize the soil, and minimize water loss. A correlated land use management program should be designed to secure maximum forage and timber production, restore and maintain optimum watershed conditions from the standpoint of water yield, silt and sediment control, and human needs. The utilization of the vegetal cover to secure its maximum benefits requires a dynamic flexible grazing program that will challenge the best ability of the land users and the range managers.

Watershed Restoration

The measures recommended are those which have proved successful on lands with comparable soils, and lands in similar vegetative depletion and erosion condition in other areas. Land management measures are needed for the protection of range vegetation and for the improvement of the vegetal cover where it is in unsatisfactory condition. The desired improvement can be obtained, on much of the public domain, through administration and protection alone and where this is practical, no physical treatment will be applied. On many areas, however, cover and soil conditions are such that even with the best of management, the restoration of the vegetation and the stabilizing of the soil will be so slow that supplemental measures will be required to provide protection against further depletion and damage.

Aids are needed when the loss of vegetation has reached a point where desirable plants cannot be reestablished without artificial reseeding, and in areas where the loss of topsoil or the formation of a gully system has resulted in the production of unfavorable site conditions.

The kind and quantity of the measures required to rehabilitate the public domain in the South Park were secured from a resource inventory made in the area and from information obtained from reliable persons who were familiar with conditions in the area.

The measures proposed in this program are of two main classes. In one group are the land treatment and closely related measures, in the other are the measures not directly associated with land treatment

but required for the program in order to achieve the program objectives and to enhance the resources.

The land treatment measures include erosion control structures, contour furrows, reseeding, rodent control, fences, and water developments. The measures closely related to the above are, grazing district boundary extension, fire protection, timber studies, land surveys, consolidation of the public domain, and increased supervision.

The specific measures recommended for the public domain in South Park are: Extend the boundary of Colorado Grazing District No. 5, consolidate the public domain, increase fire protection, install erosion control structures, establish contour furrows, reseed depleted range, construct range fences, develop stock water facilities, and adjust grazing use.

Extend Boundary of Grazing District

In order to better manage the public domain and preserve and improve the resources, the boundary of the Royal Gorge Grazing District should be extended to include all public domain in the Park. It would be impractical to attempt to install the needed remedial measures listed above or effectively manage the domain for the preservation of the measures or improvement of the watershed condition without the security afforded by a grazing district.

Consolidated Land Ownership

In order to be most effective, the measures which are installed for watershed rehabilitation must receive adequate protection and proper management. Exchange and consolidation of lands into larger blocks so as to eliminate, as far as possible, the "shot gun" pattern of ownership would be an aid in securing the needed protection. An exchange and consolidation would be advantageous to the Bureau of Land Management, the State, and private interests in that it would rid these groups of the necessity of supervising and protecting the many small tracts scattered over a wide area and would allow them to concentrate their efforts of rehabilitation and supervision to larger consolidated areas.

Land exchanges in which public domain is involved must be made on an equal value basis. This will involve examination and comparison of values of the lands involved in the exchange. It is estimated that $10,000 will be required to complete the consolidation and other needed land adjustments. This sum represents the estimated cost of examination and investigation in connection with the working out of exchanges or other types of land adjustments and in processing transfers of ownership.

Land Surveys

In order to consolidate the public domain in South Park, whether by exchange or other means, it will be necessary to locate, examine, and appraise both the public lands and the private lands to be exchanged. Many of the original survey corners cannot be found so that before an appraisal can be made or an exchange consummated, a resurvey of considerable extent will be needed. It is estimated that it will require the resurvey of the equivalent of six townships at a cost of $10,000 each.

Increased Fire Protection

Fire is one of the greatest hazards to a watershed. If uncontrolled, it can in a few minutes, destroy the protective cover which nature has been centuries in building. A considerable portion of the recommended increased fire protection expenditure is needed to augment and intensify the present fire prevention organization and for additional training in presuppression and actual control. The cost for training seasonal fire guards and for equipment to protect some 60,000 acres will be $3,000 annually.

Erosion Control Structures

On the steeper lands there have developed, over the years, gullies of considerable extent. In order to prevent further cutting and to stabilize the channels and retard channel advancement, it will require certain erosion control structures in addition to the measures intended to increase the vegetal cover. To give stability and protection while the vegetation is becoming fully effective some 200 of these structures will be installed at a cost of $10,000.

Contour Furrows and Seeding

There are about 1500 acres of land on which erosion has advanced to a stage where it has established a definite gully pattern. As yet, these areas are not critical but the gully pattern must be destroyed before an advance state of erosion is established. This can be accomplished by contour furrowing which will break up the channels, collect water, and aid in establishing vegetation. The cost of installing these furrows will be $3,750.

Competition - Removal and Seeding

Many factors have contributed to the depletion of the more desirable forage plants and an increase in unpalatable vegetation, resulting in a marked decrease in cover density on much of the watershed.

There are some 20,000 acres of land in a depleted state where it will require artificial reseeding to restore the vegetation to a satisfactory condition in a reasonable length of time. The restored vegetal cover will increase the infiltration capacity of the soil, retard runoff, reduce erosion, and increase the forage supply. The soil, slope, and many other factors on the above 20,000 acres are favorable for establishing a desirable and effective plant cover, but it will require the removal of undesirable competitive vegetation to successfully accomplish the desired results. The cost of this measure will be $130,000.

Rodent Control

Because rodents destroy the effectiveness of the furrows and other structures by burrowing, retard the establishment of the vegetation by destroying the young plants, it is desirous that rodents be controlled on seeded and adjacent lands. Rodent control is also desirable on lands where rapid natural recovery is desired and on areas where they compete with livestock for the forage. Control is especially important during the early stages of the program. It is estimated that 30,000 acres will require control treatment for which the cost will be $18,000.

Fences

In order to protect the reseeded areas and distribute livestock on the range, it will require the construction of 60 miles of drift and enclosure fences. The fences will be of a type requisite to the job they are to perform. In most cases these fences will be located where they will become a permanent part of the range control mechanism. The cost of these fences will be $36,000.

Water Developments

Twenty additional water developments are needed to improve livestock distribution and forage utilization. These will make possible more effective use of the ranges and retard depletion of the vegetation adjacent to watering places. These developments will cost $14,000.

Range Use Adjustments

Adjustments in grazing practices on much of the land are plainly needed. Changes are needed in distribution of stock, intensity of use, and seasonal use. Concentration of excessive numbers on vulnerable areas should be eliminated. Stock should be kept from the range until proper growth is attained by the vegetation. Stocking should be of an intensity that will permit a residue of vegetation sufficient to maintain a healthy vigorous association of the most desirable forage plants. Adjustments in grazing use vary from minor reductions on ranges that are slightly overstocked, to elimination of use on critical areas such as those producing heavy runoff or silt movement, and on shallow, poor soils, or steep slopes where misuse has nearly destroyed the vegetation. Temporary nonuse must be maintained on reseeded areas until the vegetal cover is fully established.

Timber Study and Plans

In South Park there are over 16,000 acres of forested public domain where little is known about the forest values involved, the forest condition, management, protection, or reforestation treatment needed. These forest lands have received little protection or management and since most of these lands are accessible, there can be little doubt but that considerable unauthorized cutting has occurred in the past.

Until a reconnaissance is made, no estimate can be made of reforestation needs or of treatments required. In order to have a basis for preparing management plans a timber survey is needed. Such a survey will cost $1.20 per acre. Following the survey management, plans must be prepared which will cost five cents per acre. The overall cost for the survey and plans will be about $20,000.

Supervision

In the past, personnel have not been available to give the public domain adequate supervision and thus the land, forage, and timber have been misused and abused. To properly safeguard the resources of some 40,000 acres of public domain, it will be necessary to furnish supervisory personnel. The cost of such supervision will be about six cents per acre or $2,400 annually.

Following is a summary of the measures recommended for the public domain of South Park, together with the estimated costs. The expense for technical assistance and overhead has been included in costs as shown in the following table. The costs shown here are based on the time in man and machine hours that past experience has shown were required to install similar measures in comparable situations and on 1953 prices:

ESTIMATED COST OF MEASURES

Measure	Unit	No. of Units	Installation Cost	Annual Mtse.
Consolidation of Public Domain			$10,000	
Land Surveys	Twps.	6	60,000	
Erosion Control Structures	Each	200	10,000	
Contour Furrow and Seed	Acre	1,500	3,750	
Comp. Removal and Seed	Acre	20,000	130,000	
Rodent Control	Acre	30,000	18,000	$900
Fences	Mile	60	36,000	1,800
Water Developments	No.	20	14,000	700
Timber Surveys and Plans	Acre	16,000	20,000	
Fire Protection[1/]	Acre	60,000	1,800	1,800
Supervision[1/]	Acre	40,000	2,400	2,400

1/ Annual cost.

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A P P E N D I X

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General Description of Land Use Capability Classes

Only descriptions of Classes IV through VIII are given since no other classes were recognized in South Park.

CLASS IV - Land capable of being used for occasional or limited cultivation with intensive practices:

This class of land is characterized by steep slopes, severe erosion, physical obstacles such as stoniness or very poor drainage, low productivity, open or porous soils which give excessive permeability, other qualities that make it unsuited for continuous or regular cultivation. It is not good land for row crops and is best suited for permanent pasture. Some of the nearly level imperfectly drained land, classed as IV, is not subject to erosion, but is unsuited for intertilled crops because of the time required for the soil to dry out in the spring and because of its low productivity when planted to these crops. More intensive cultivation is justified only if the farm does not have enough better cropland and then only for a temporary period until other adjustments can be made or in time of emergency when a large acreage is needed for a few years.

CLASS V - Land not capable of being cultivated but capable of being used for permanent vegetation (grazing or woodland) with no special restrictions or special practices.

It must be nearly level and not subject to wind or water erosion. This class consists largely of land that is too wet or stony for cultivation but produces forage or woodland products. Land that may be nearly level, have deep soils with good fertility, and is in no appreciable danger of erosion but has rainfall too low for successful production of cultivated crops, and no irrigation water is or is likely to be made available would be placed in Class V.

If the cover is in good condition now, the land requires no special restrictions or special practices for its protection, although certain range management or woodland management practices such as stocking within carrying capacity and prevention of burning are always needed to obtain satisfactory production.

CLASS VI - Land not cultivable but capable of being used for permanent vegetation with moderate restrictions in use.

Most of this class of land is either moderately sloping and therefore subject to water erosion, or is subject to wind erosion. This class as a rule is either steeper or more subject to wind erosion than Class IV land. It must not be too severely eroded, however, to prevent safe use with moderate restrictions. Little of Class VI land

is poorly drained. The restrictions commonly needed on range land in this class are: Limitation of grazing to carrying capacity, deferred grazing to permit growth of grass in the spring, and rotation of grazing to permit some grass to mature and form seed. Fencing, proper distribution of watering places, proper salting and herding are some of the practices necessary. Contour furrows, ridges and water spreaders may be useful to check runoff or divert water and thereby increase the growth of grass and reduce erosion. Land in this class might have the vegetation (range or woodland) depleted by mismanagement, and might require severe restrictions in use temporarily in order to permit recovery of vegetation.

CLASS VII - Land not capable of being cultivated and requires severe restrictions if it is used for grazing or woodland.

Most land in Class VII is steep, rough, eroded, or highly susceptible to wind erosion. All of it, however, must be capable of producing vegetation useful for forage or woodland products. This class includes areas characterized by shallow soils, low moisture holding capability and excessive runoff. Land that includes soils of a very sandy nature and a scant vegetative cover obtainable in a region of low rainfall, subject to wind erosion, should have the grazing severely restricted and would, therefore, be included in Class VII.

Many of the restrictions in use and special practices needed are similar to those for Class VI land, but they must be applied more intensively. Contour furrows, ridges and water spreaders are, for the most part, not applicable on Class VII range land because of the topography or inherent soil characteristics. Salting and watering places should not be located on Class VII lands if there is any Class IV land nearby on which to place them.

Practices recommended for Class VII woodland include exclusion of livestock, prevention of fire, selective cutting practices, avoiding over cutting (clear cutting) and careful harvesting methods with skid roads on contour if possible.

Arid land affording only sparse annual vegetation for grazing a few weeks each year, mountain land that might yield some forage but on which any grazing would induce destructive runoff and erosion and steep sides of rock gorges that support only scattered shrubs and trees would be classified as Class VIII land rather than as Class VII.

CLASS VIII land is not capable of being used for cultivation or for the production of useful, permanent vegetation (grazing or woodland).

This class includes land that because of its inherent soil characteristics or other features cannot be effectively used for grazing or for woodland products. It may, however, have some value for wildlife. Land of this class may receive insufficient moisture, lack necessary fertility, or otherwise be unsuitable for the production of usable permanent vegetation (grazing or woodland).

Examples of Class VIII land would be deserts, sand hills (dunes), inaccessibly steep areas, excessively salty areas, extremely stony areas, barren land (badlands), and swamps or marshes that cannot be drained economically, because the cost of the drainage is greater than the return that would be obtained.

Following is a list by legal descriptions of the tracts in the South Platte watershed which are suitable for disposal. This information was summarized in Table II:

Twp.	Range	Sec.		Acres
Boulder County Colorado				
1 N.	71 W.	9	$SE\frac{1}{4}SE\frac{1}{4}$	40.00
		15	Lots 3 and 4	30.12
2 N.	71 W.	26	Lots 3 and 4	80.00
3 N.	71 W.	10	$NW\frac{1}{4}SW\frac{1}{4}$	40.35
				190.47
Douglas County Colorado				
8 S.	68 W.	20	$NW\frac{1}{4}SE\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}$	80.00
9 S.	67 W.	1	Lot 4 ($NW\frac{1}{4}NW\frac{1}{4}$)	40.84
9 S.	68 W.	24	$SW\frac{1}{4}NW\frac{1}{4}$	40.00
9 S.	67 W.	6	$NW\frac{1}{4}NW\frac{1}{4}$	38.24
9 S.	68 W.	1	$SE\frac{1}{4}NE\frac{1}{4}$	40.00
				239.08
Elbert County Colorado				
7 S.	61 W.	6	Lot 2 ($NE\frac{1}{4}NW\frac{1}{4}$)	40.16
8 S.	62 W.	14	$NW\frac{1}{4}NE\frac{1}{4}$	40.00
9 S.	61 W.	18	$NW\frac{1}{4}NW\frac{1}{4}$	47.70
9 S.	63 W.	14	$NW\frac{1}{4}SW\frac{1}{4}$	40.00
				167.86
El Paso County Colorado				
11 S.	67 W.	1	$SW\frac{1}{4}NW\frac{1}{4}$	40.00
Gilpin County Colorado				
3 S.	72 W.	2	Lot 2, $NW\frac{1}{4}NW\frac{1}{4}$	36.64
Larimer County Colorado				
5 N.	70 W.	2	$SE\frac{1}{4}NW\frac{1}{4}$	40.00
6 N.	70 W.	2	$NE\frac{1}{4}SE\frac{1}{4}$	40.00
		12	$E\frac{1}{2}W\frac{1}{2}$	160.00
		3	$NW\frac{1}{4}NW\frac{1}{4}$ (Lot 4)	40.20
		4	$SW\frac{1}{4}SE\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$	80.00
		5	$W\frac{1}{2}NW\frac{1}{4}$ (Lot 4, $SW\frac{1}{4}NW\frac{1}{4}$)	79.43
		9	$NW\frac{1}{4}NE\frac{1}{4}$	40.00
8 N.	69 W.	6	$SW\frac{1}{4}$ (Lots 6, 7, $E\frac{1}{2}SW\frac{1}{4}$)	168.98
		19	$SW\frac{1}{4}SW\frac{1}{4}$ (Lot 4)	44.78
9 N.	69 W.	30	$SE\frac{1}{4}NW\frac{1}{4}$, $NE\frac{1}{4}SW\frac{1}{4}$	80.00
9 N.	70 W.	4	$SW\frac{1}{4}SE\frac{1}{4}$	40.00
9 N.	71 W.	15	$NW\frac{1}{4}SE\frac{1}{4}$	40.00
		23	$E\frac{1}{2}E\frac{1}{2}$	160.00
		17	$S\frac{1}{2}NW\frac{1}{4}$, $W\frac{1}{2}SW\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}$	
		18	$S\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}$, $S\frac{1}{2}SE\frac{1}{4}$	400.00

Following is a list by legal descriptions of the tracts in the South Platte watershed which are suitable for disposal. This information was summarized in Table II:

Twp.	Range	Sec.		Acres
Boulder County Colorado				
1 N.	71 W.	7	SE¼SE¼	40.00
		15	Lots 3 and 4	30.12
2 N.	71 W.	26	Lots 3 and 4	80.00
3 N.	71 W.	10	NW¼SW¼	10.35
				190.47
Douglas County Colorado				
8 S.	68 W.	20	NW¼SE¼, SW¼NE¼	80.00
9 S.	67 W.	1	Lot 4 (NW¼NW¼)	40.84
9 S.	68 W.	24	SW¼NW¼	40.00
9 S.	67 W.	6	NW¼NE¼	38.24
9 S.	68 W.	1	SE¼NE¼	40.00
				239.08
Elbert County Colorado				
7 S.	61 W.	6	Lot 2 (NE¼NW¼)	40.16
8 S.	62 W.	14	NW¼NE¼	40.00
9 S.	61 W.	18	NW¼NW¼	47.70
9 S.	63 W.	14	NW¼SW¼	40.00
				167.86
El Paso County Colorado				
11 S.	67 W.	1	SW¼NW¼	40.00
Gilpin County Colorado				
3 S.	72 W.	2	Lot 2, NW¼NW¼	36.61
Larimer County Colorado				
5 N.	70 W.	2	SE¼NW¼	40.00
6 N.	70 W.	2	NE¼SE¼	40.00
		12	E½W½	160.00
		3	NE¼NW¼ (Lot 4)	40.20
		4	SW¼SE¼, NE¼SE¼	80.00
		5	W½NW¼ (Lot 4, SW¼NW¼)	79.43
		9	NW¼SE¼	40.00
8 N.	69 W.	6	SW¼ (Lots 6, 7, E½SW¼)	164.98
		19	SW¼SW¼ (Lot 4)	44.78
9 N.	69 W.	30	SE¼NW¼, NE¼SW¼	80.00
9 N.	70 W.	4	SW¼SE¼	40.00
9 N.	71 W.	15	NW¼SE¼	40.00
		23	E½E½	160.00
		17	S½NW¼, W½SW¼, SE¼SW¼	
		18	S½NE¼, SE¼SW¼, S½SE¼	400.00

Twp.	Range	Sec.		Acres
10 N.	69 W.	8	W½SW¼	80.00
		8	E½SE¼	80.00
		28	W½W½	160.00
		32	SW¼NE¼, W½SE¼	120.00
10 N.	70 W.	4	SE¼SE¼	40.00
		10	W½NW¼, SW¼, W½SE¼	320.00
		12	NE¼NE¼	40.00
		12	SW¼NE¼, S½NW¼, N½SW¼, NW¼SE¼	240.00
		33	NE¼SW¼, NW¼SE¼	80.00
10 N.	71 W.	30	NE¼NW¼	40.00
		33	NW¼SW¼	40.00
		34	NE¼NW¼	40.00
11 N.	69 W.	6	NW¼NW¼ (Lot 7)	41.01
		10	N½NE¼	80.00
		10	SW¼SW¼	40.00
		10	SE¼SE¼	40.00
		30	E½E½	160.00
11 N.	70 W.	24	SE¼	160.00
		34	E½NE¼, NE¼SE¼	120.00
11 N.	71 W.	30	NE¼NW¼, Lots 1, 2, 3	161.55
		4	NW¼NE¼, S½NE¼, NE¼SE¼ Less the: E½SW¼SE¼NE¼	155.64
11 N.	72 W.	12	Lot 1 (NE¼SE¼)	46.13
12 N.	70 W.	22	Lots 1 and 2	34.40
		34	NW¼NE¼	40.00
12 N.	71 W.	24	Lots 1, 2	26.41
				3,798.53

Logan County Colorado				
8 N.	51 W.	9	NE¼SW¼	40.00
		17	S½NE¼, SE¼NW¼	120.00
		18	SE¼	160.00
				320.00

Morgan County Colorado				
1 N.	57 W.	22	NW¼NW¼	40.00
2 N.	56 W.	22	SE¼SE¼	40.00
2 N.	58 W.	32	W½SW¼	80.00
2 N.	49 W.	17	NE¼NE¼	40.00
3 N.	56 W.	26	NW¼NE¼	40.00
4 N.	55 W.	5	SE¼NE¼	40.00
		7	SE¼NE¼	40.00
4 N.	60 W.	1	SE¼NW¼	40.00
6 N.	58 W.	26	NE¼SE¼	40.00
		19	Lot 3, NE¼SW¼	83.10
6 N.	57 W.	31	Lot 2	35.85
				518.95

Twp.	Range	Sec.		Acres
10 N.	69 W.	8	$S\frac{1}{2}SW\frac{1}{4}$	80.00
		8	$E\frac{1}{2}SE\frac{1}{4}$	80.00
		28	$W\frac{1}{2}W\frac{1}{4}$	160.00
		32	$SW\frac{1}{4}NE\frac{1}{4}$, $W\frac{1}{2}SE\frac{1}{4}$	120.00
10 N.	70 W.	4	$SE\frac{1}{4}SE\frac{1}{4}$	40.00
		10	$W\frac{1}{2}NW\frac{1}{4}$, $SW\frac{1}{4}$, $W\frac{1}{2}SE\frac{1}{4}$	320.00
		12	$NE\frac{1}{4}NE\frac{1}{4}$	40.00
		12	$SW\frac{1}{4}NE\frac{1}{4}$, $S\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}$	280.00
		33	$NE\frac{1}{4}SW\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}$	80.00
10 N.	71 W.	30	$NE\frac{1}{4}NW\frac{1}{4}$	40.00
		31	$NW\frac{1}{4}SW\frac{1}{4}$	40.00
		34	$NE\frac{1}{4}NW\frac{1}{4}$	40.00
11 N.	69 W.	6	$NW\frac{1}{4}NW\frac{1}{4}$ (Lot 7)	43.01
		10	$N\frac{1}{2}NE\frac{1}{4}$	80.00
		10	$SW\frac{1}{4}SW\frac{1}{4}$	40.00
		10	$SE\frac{1}{4}SE\frac{1}{4}$	40.00
		30	$E\frac{1}{2}E\frac{1}{2}$	160.00
11 N.	70 W.	24	$SE\frac{1}{4}$	160.00
		34	$E\frac{1}{2}NE\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$	120.00
11 N.	71 W.	30	$NE\frac{1}{4}NW\frac{1}{4}$, lots 1, 2, 3	161.55
		4	$NW\frac{1}{4}NE\frac{1}{4}$, $S\frac{1}{2}NE\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$	
			less the: $E\frac{1}{2}SW\frac{1}{4}SE\frac{1}{4}NE\frac{1}{4}$	155.64
11 N.	72 W.	12	lot 1 ($NE\frac{1}{4}SE\frac{1}{4}$)	46.13
12 N.	70 W.	22	lots 1 and 2	34.40
		34	$NW\frac{1}{4}NE\frac{1}{4}$	40.00
12 N.	71 W.	24	lots 1, 2	26.41
				3,758.53

Logan County Colorado				
8 N.	51 W.	7	$NE\frac{1}{4}SW\frac{1}{4}$	40.00
		17	$S\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$	120.00
		18	$SE\frac{1}{4}$	160.00
				320.00

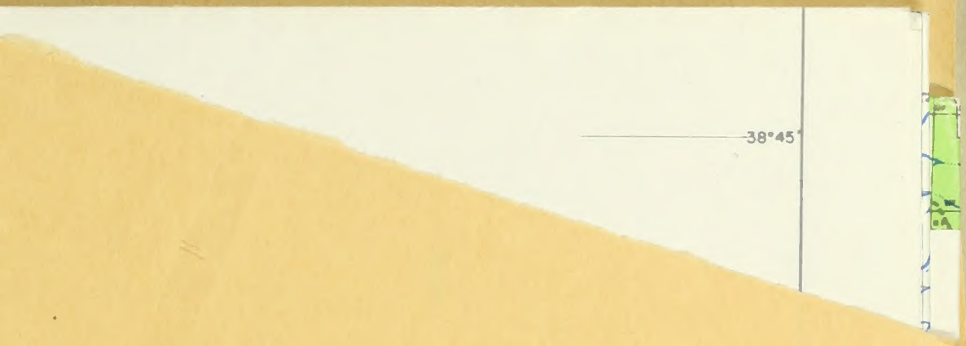
Morgan County Colorado				
1 N.	57 W.	22	$NW\frac{1}{4}NW\frac{1}{4}$	40.00
2 N.	56 W.	22	$SE\frac{1}{4}SE\frac{1}{4}$	40.00
2 N.	58 W.	32	$W\frac{1}{2}SW\frac{1}{4}$	80.00
2 N.	60 W.	12	$NE\frac{1}{4}NE\frac{1}{4}$	40.00
3 N.	56 W.	26	$NW\frac{1}{4}NE\frac{1}{4}$	40.00
4 N.	55 W.	5	$SE\frac{1}{4}NE\frac{1}{4}$	40.00
		7	$SE\frac{1}{4}NE\frac{1}{4}$	40.00
4 N.	60 W.	1	$SE\frac{1}{4}NW\frac{1}{4}$	40.00
6 N.	58 W.	26	$NE\frac{1}{4}SE\frac{1}{4}$	40.00
		19	lot 3, $NE\frac{1}{4}SW\frac{1}{4}$	83.10
6 N.	57 W.	31	lot 2	35.85
				510.95

Twp.	Range	Sec.		Acres
Park County Colorado				
7 S.	72 W.	26	$SW\frac{1}{4}SE\frac{1}{4}$	40.00
		27	$SE\frac{1}{4}SW\frac{1}{4}$	40.00
		28	$SE\frac{1}{4}SW\frac{1}{4}$	40.00
				120.00
Sedgwick County Colorado				
12 N.	46 W.	26	Lot 3	31.20
10 N.	47 W.	17	$NE\frac{1}{4}SW\frac{1}{4}$	40.00
				71.20
Teller County Colorado				
13 S.	70 W.	3	$SE\frac{1}{4}SW\frac{1}{4}$	40.00
		10	$NW\frac{1}{4}NW\frac{1}{4}$	40.00
				80.00
Washington County Colorado				
3 S.	53 W.	31	$SW\frac{1}{4}NE\frac{1}{4}$	40.00
4 S.	53 W.	7	$SE\frac{1}{4}NW\frac{1}{4}$	40.00
4 S.	55 W.	26	$W\frac{1}{2}SW\frac{1}{4}$	80.00
4 S.	56 W.	13	$SE\frac{1}{4}NE\frac{1}{4}$	40.00
5 S.	55 W.	26	$NW\frac{1}{4}NW\frac{1}{4}$	40.00
				240.00
Weld County Colorado				
3 N.	62 W.	19	$W\frac{1}{2}SE\frac{1}{4}$, $E\frac{1}{2}SW\frac{1}{4}$	160.00
5 N.	63 W.	12	$SE\frac{1}{4}$	160.00
5 N.	62 W.	27	$SW\frac{1}{4}$, $W\frac{1}{2}NE\frac{1}{4}$, $W\frac{1}{2}SE\frac{1}{4}$	320.00
7 N.	57 W.	26	$NW\frac{1}{4}NW\frac{1}{4}$	40.00
7 N.	64 W.	2	$E\frac{1}{2}$	320.13
9 N.	62 W.	27	$SE\frac{1}{4}SW\frac{1}{4}$	40.00
9 N.	62 W.	35	$SE\frac{1}{4}SW\frac{1}{4}$	40.00
11 N.	61 W.	18	$SE\frac{1}{4}SE\frac{1}{4}$	40.00
11 N.	62 W.	12	$E\frac{1}{2}SE\frac{1}{4}$, $SW\frac{1}{4}SE\frac{1}{4}$	120.00
11 N.	64 W.	4	Lots 3, 4, $S\frac{1}{2}NW\frac{1}{4}$	159.74
11 N.	67 W.	6	Lot 3 ($NE\frac{1}{4}NW\frac{1}{4}$)	40.42
12 N.	63 W.	19	Lots 1, 2, 3, 4	9.27
12 N.	64 W.	20	$NE\frac{1}{4}NE\frac{1}{4}$, $N\frac{1}{2}NW\frac{1}{4}$	133.08
12 N.	66 W.	23	Lots 1, 2, 3, 4	.96
				1,584.09
Albany County Wyoming				
12 N.	72 W.	2	$NE\frac{1}{4}NE\frac{1}{4}$	40.00
			$NW\frac{1}{4}NW\frac{1}{4}$	53.00
12 N.	74 W.	24	$N\frac{1}{2}N\frac{1}{2}$	195.00
13 N.	71 W.	4	$S\frac{1}{2}S\frac{1}{2}$	160.00
		20	$NW\frac{1}{4}NW\frac{1}{4}$	40.00
13 N.	72 W.	24	$SE\frac{1}{4}$	160.00
		26	$S\frac{1}{2}N\frac{1}{2}$, $N\frac{1}{2}S\frac{1}{2}$	320.00

Twp.	Range	Sec.		Acres
Park County Colorado				
7 S.	72 W.	26	SW¼SE¼	
		27	SE¼SW¼	40.00
		28	SE¼SW¼	40.00
				40.00
				120.00
Sedgwick County Colorado				
12 N.	46 W.	20	Lot 3	31.20
10 N.	47 W.	17	NE¼SW¼	40.00
				71.20
Teller County Colorado				
13 S.	70 W.	3	SE¼SW¼	40.00
		10	NW¼NW¼	40.00
				80.00
Washington County Colorado				
3 S.	53 W.	31	SW¼NE¼	40.00
4 S.	53 W.	7	SE¼NW¼	40.00
4 S.	55 W.	26	W½SW¼	80.00
4 S.	56 W.	13	SE¼NE¼	40.00
5 S.	55 W.	26	NW¼NW¼	40.00
				280.00
Weld County Colorado				
3 N.	62 W.	19	W½SE¼, E½SW¼	160.00
5 N.	63 W.	12	SE¼	160.00
5 N.	62 W.	27	SW¼, W½NE¼, W½SE¼	320.00
7 N.	57 W.	26	NW¼NW¼	40.00
7 N.	64 W.	2	E½	320.13
9 N.	62 W.	27	SE¼SW¼	40.00
9 N.	62 W.	35	SE¼SW¼	40.00
11 N.	61 W.	18	SE¼SE¼	40.00
11 N.	62 W.	12	E½SE¼, SW¼SE¼	120.00
11 N.	64 W.	4	Lots 3, 4, S½NW¼	159.74
11 N.	67 W.	6	Lot 3 (NE¼NW¼)	40.42
12 N.	63 W.	19	Lots 1, 2, 3, 4	9.27
12 N.	64 W.	20	NE¼NE¼, N½NW¼	133.08
12 N.	66 W.	23	Lots 1, 2, 3, 4	.36
				1,280.09
Albany County Wyoming				
12 N.	72 W.	2	NE¼NE¼	40.00
			NW¼NW¼	53.00
12 N.	74 W.	24	N½N½	195.00
13 N.	72 W.	4	S½S½	160.00
		20	NW¼NW¼	
13 N.	72 W.	24	SE¼	40.00
		26	S½N½, N½S½	160.00
				320.00

Twp.	Range	Sec.		Acres
Albany County Wyoming (Cont'd.)				
14 N.	71 W.	32	SE¼SW¼, SW¼SE¼	80.00
15 N.	72 W.	28	N½NE¼, NE¼NW¼	120.00
16 N.	71 W.	34	S½S½	160.00
				1,328.00
Laramie County Wyoming				
12 N.	60 W.	4	SE¼	160.00
		20	Lots 1,2,3	2.00
12 N.	66 W.	20	Lots 1,2,3,4	55.01
		22	Lots 1,2,3,4	5.00
12 N.	69 W.	2	SW¼NW¼	40.00
		4	SW¼NW¼	40.00
12 N.	70 W.	2	SE¼NE¼	40.00
		10	SW¼NW¼	40.00
13 N.	60 W.	2	Lots 5,6	15.00
		28	W½	320.00
13 N.	67 W.	6	SW¼SW¼	41.00
14 N.	69 W.	4	N½NE¼, SE¼NE¼, NE¼NW¼	157.00
14 N.	70 W.	24	NW¼NE¼, SE¼	200.00
15 N.	70 W.	34	S½NW¼, NE¼SW¼, NW¼SE¼	160.00
16 N.	68 W.	24	SW¼NE¼, S½NW¼, S½	440.00
16 N.	69 W.	24	SE¼SW¼	40.00
				1,755.00
Lincoln County Nebraska				
13 N.	34 W.	8	Lot 1	0.03

Twp.	Range	Sec.	Acres
Albany County Wyoming (Cont'd.)			
14 N.	71 W.	32 SE¼SW¼, SW¼SE¼	80.00
15 N.	72 W.	28 N½NE¼, NE¼NW¼	120.00
16 N.	72 W.	34 S½S½	160.00
			1,328.00
Laramie County Wyoming			
12 N.	60 W.	4 SE¼	160.00
		20 Lots 1,2,3	2.00
12 N.	66 W.	20 Lots 1,2,3,4	55.01
		22 Lots 1,2,3,4	5.00
12 N.	69 W.	2 SW¼NW¼	40.00
		4 SW¼NW¼	40.00
12 N.	70 W.	2 SE¼NE¼	40.00
		10 SW¼NW¼	40.00
13 N.	60 W.	2 Lots 5,6	15.00
		28 W½	320.00
13 N.	67 W.	6 SW¼SW¼	42.00
14 N.	69 W.	4 N½NE¼, SE¼NE¼, NE¼NW¼	157.00
14 N.	70 W.	24 W½NE¼, SE¼	200.00
15 N.	70 W.	34 S½NW¼, NE¼SW¼, NW¼SE¼	160.00
16 N.	68 W.	24 SW¼NE¼, S½NW¼, S½	440.00
16 N.	69 W.	24 SE¼SW¼	40.00
			1,755.00
Lincoln County Nebraska			
13 N.	31 W.	6 Lot 1	0.03


38°45'

R. 78 W.
R. 75 W.
R. 74 W.
R. 73 W.
T. 7 S.
T. 8 S.
T. 9 S.
T. 10 S.
T. 11 S.
T. 12 S.
105° 45'
105° 30'
39° 15'
39° 00'
GRAZING DISTRICT NUMBER

GRAZING DISTRICT NUMBER 5

COLORADO

CAPABILITY COLOR LEGEND

	CLASS NO.
ARABLE LANDS	IV
GRAZING LANDS	V
	VI
	VII
WASTE OR BAD LANDS	VIII

NOTE; REFER TO TEXT FOR CLASS DEFENITIONS

T. 12 S.
T. 13 S.
T. 14 S.
T. 15 S.

R.77 W.
R.76 W.
R.75 W.
R.74 W.
R.73 W.
R.72 W.

39°00'
38°45'
108°00'
108°45'
105°30'

LEGEND

LANDS

- PRIVATE
- STATE
- PUBLIC DOMAIN
- FOREST (NATIONAL FORESTS)

TOPOGRAPHY

- RIVERS
- STREAMS
- LAKES
- RESERVOIRS
- CANALS

WORKS AND STRUCTURES

- HIGHWAYS
- IMPROVED ROADS
- UNIMPROVED ROADS
- TOWNS
- BENCH MARKS
- DISTRICT BOUNDARY

REFERENCE:
Base map prepared from General Land Office maps, U.S. Forest Service maps and U.S. Geological Survey maps.
Land Status compiled from records and maps, supplied by Bureau of Land Management.

LOCATION MAP

REVISION	DATE	DESCRIPTION	BY

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT — REGION IV

UPPER SOUTH PLATTE RIVER AREA
MISSOURI BASIN COLORADO

DRAWN BY: W. Baron	APPROVED: DATE: 6/20/51
TRACED BY:	
CHECKED BY: W. Baron	DRAWING NUMBER
SUBMITTED BY: V.B. Risinger	SHEET 1 OF 1

108° 00'

105° 45'

108° 30'

R. 76 W.

R. 75 W.

T. 7 S.

T. 8 S.

T. 8 S.

T. 9 S.

39° 15'

R. 74 W.

39° 15'

T. 10 S.

T. 10 S.

R. 73 W.

T. 11 S.

T. 11 S.

39° 00'

T. 12 S.

12 S.

39° 00'

COLORADO GRAZING DISTRICT NUMBER 5

COLORADO GRAZING DISTRICT NUMBER 5

T. 12 S.
T. 13 S.
T. 14 S.
T. 15 S.
T. 11 S.

39°00'
38°45'

R.77 W.
R.76 W.
R.75 W.
R.74 W.
R.73 W.
R.72 W.

106°00'
105°45'
105°30'

Park County

T. 12 S., R. 75 W., Sec. 15, S½ SW¼ SW¼ - 40 acres - V Grazing - Grass
T. 12 S., R. 77 W., Sec. 25, S½ SE¼ - 80 acres - VII - Grazing - (75a - conifer, 5a - grass)
T. 13 S., R. 76 W., Sec. 6, S½ - 160 acres - (80a - VII, 80a - VI) Grazing - (60a - conifer - 100 a - grass)

LEGEND

LANDS

- PRIVATE
- STATE
- PUBLIC DOMAIN
- FOREST (NATIONAL FORESTS)

TOPOGRAPHY

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- DISTRICT BOUNDARY

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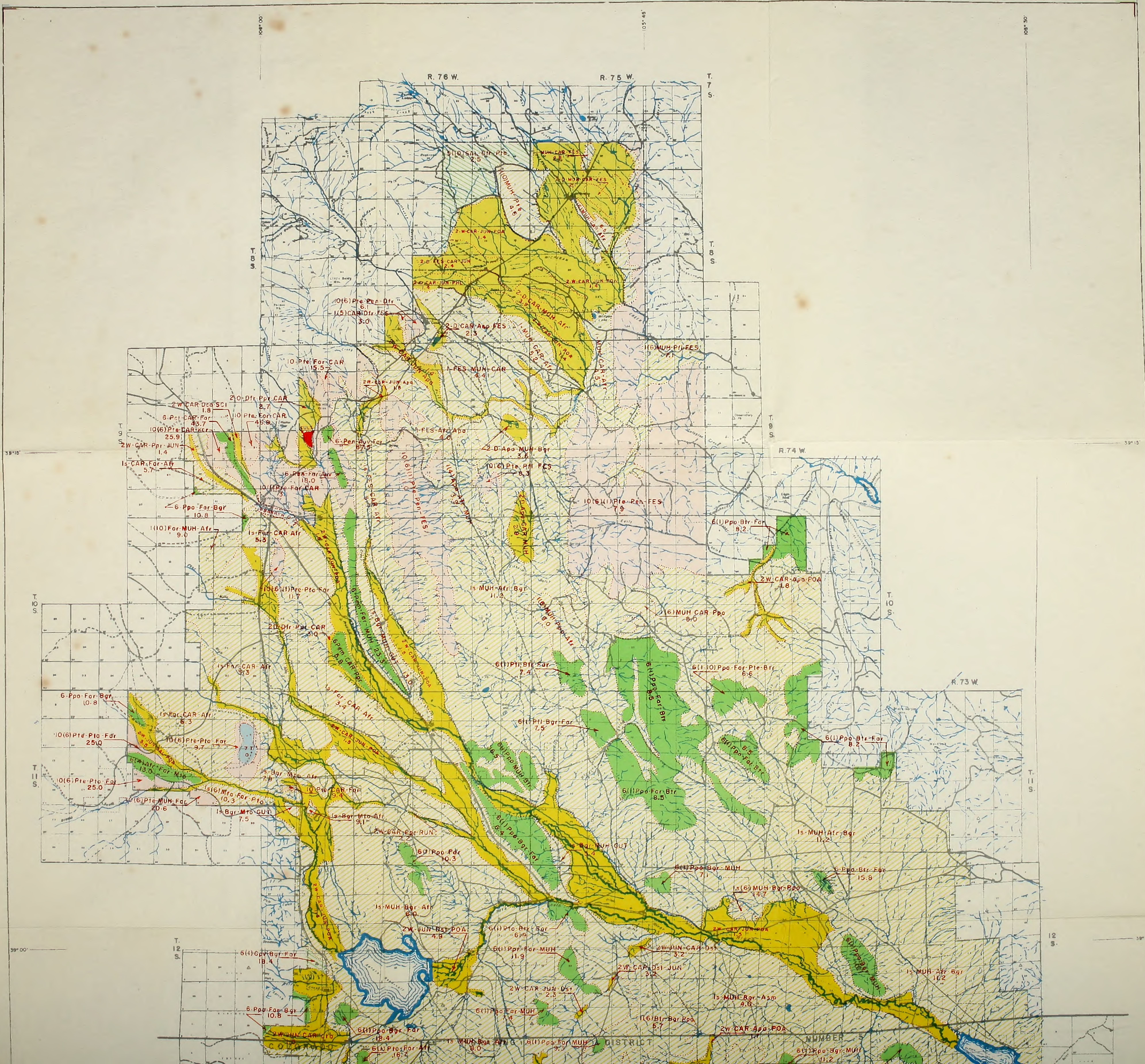
REVISION	DATE	DESCRIPTION	BY

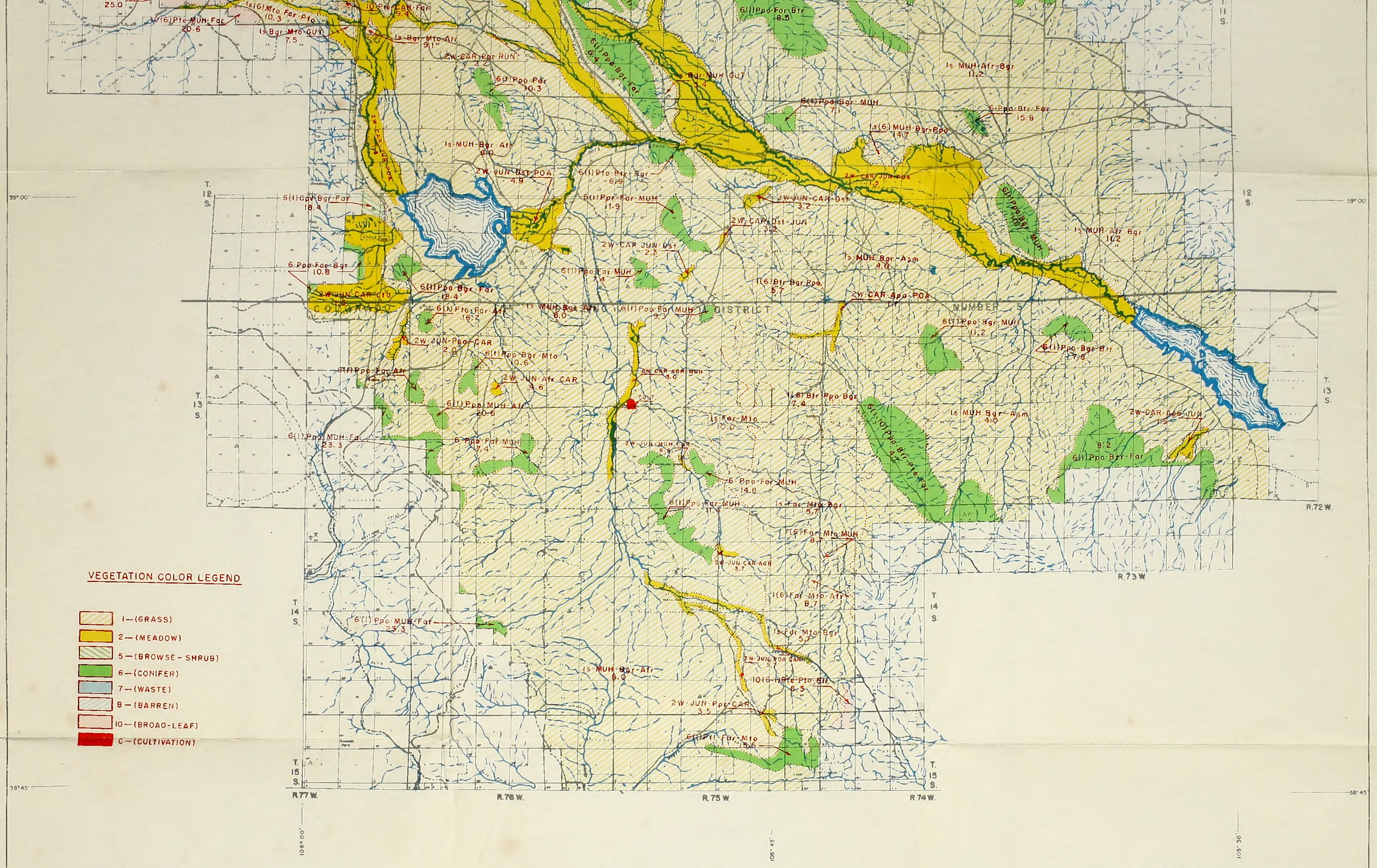
UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT – REGION IV

UPPER SOUTH PLATTE RIVER AREA
MISSOURI BASIN COLORADO

LAND STATUS

DRAWN BY: W. Baton		APPROVED: [signature]	DATE: 6/25/01
TRACED BY:		CHIEF, DIVISION OF R.E.	
CHECKED BY: W. Baton		DRAWING NUMBER	
SUBMITTED BY: V.B. Richman		SHEET 1 OF 1	


R. 76 W.
R. 75 W.
T. 7 S.
T. 8 S.
T. 9 S.
R. 74 W.
T. 10 S.
R. 73 W.
T. 11 S.
T. 12 S.
39°15'
39°00'
105°45'
105°30'
1S-MUH-Afr-Bgr
11.2
6(1) Ppo-For-Btr
8.5
2W-CAR-Apo-POA
1.8
6(1) Ppo-Btr-For
8.2
10(6) Pte-Pto-For
25.0
6-Ppo-For-Bgr
10.8
1(10) For-MUH-Afr
9.0
1S-CAR-For-Afr
5.7
6(1)Ppo-Bgr-MUH
7.1
6-Ppo-Btr-For
15.8
6(1)Ppo-Bgr-For
18.4
6-Ppo-For-Bgr
10.8
2W-CAR-Apo-POA
1S-MUH-Bgr-Asm
4.0
1(6) Btr-Bgr-Poa
5.7
6(1)Ppo-Btr-For
8.2
6(1) Ppo-Bgr-MUH
11.2
COLORADO
NUMBER



VEGETATION COLOR LEGEND

- 1—(GRASS)
- 2—(MEADOW)
- 5—(BROWSE - SHRUB)
- 6—(CONIFER)
- 7—(WASTE)
- 8—(BARREN)
- 10—(BROAD-LEAF)
- C—(CULTIVATION)

LEGEND

LANDS

- PRIVATE
- STATE
- PUBLIC DOMAIN
- FOREST (NATIONAL FORESTS)

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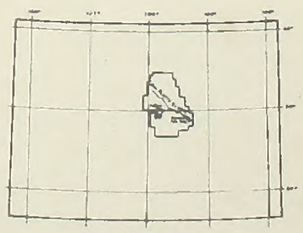

LOCATION MAP

REVISION	DATE	DESCRIPTION	BY

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT — REGION IV

UPPER SOUTH PLATTE RIVER AREA
MISSOURI BASIN COLORADO

DRAWN BY: W. Baron	APPROVED: DATE: 6/25/51
TRACED BY:	DRAWING NUMBER
CHECKED BY: W. Baron	
SUBMITTED BY: V.B. Richman	SHEET 1 OF 1